



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT
715 GRANTHAM LANE
NEW CASTLE, DELAWARE 19720-4801

WASTE MANAGEMENT SECTION
SUPERFUND BRANCH

TELEPHONE: (302) 323 - 4540
FAX: (302) 323 - 4561

September 23, 1993

100464

Mr. Paul Johnston
Standard Chlorine of Delaware, Inc.
Governor Lea Road
P.O. Box 319
Delaware City, Delaware 19706

RE: Remedial Investigation Environmental Assessment
Standard Chlorine of Delaware, Inc. Superfund Site
Delaware City, New Castle County, Delaware

Dear Mr. Johnston:

As we discussed in our telephone conversation today, questions regarding the ecological assessment work performed as part of the Remedial Investigation (RI) have arisen in connection with finalizing cleanup levels for the remedial activities to be performed at the site. Specifically, questions have arisen regarding the Hyaella azteca toxicity test results and the assessment of risk to the great blue heron.

When reviewing the RI text, accompanying figures and tables, and appendix J, confusion has arisen regarding the initial contamination concentration level of the sediment used in the Hyaella toxicity test. Table 6-95 shows that the total chlorinated benzene (TCB) concentration level in the toxicity test sample at 100 % concentration is 542.7 mg/kg. Appendix J references sample SSC-20-B as the sediment sample used for the toxicity test. According to Figure 2-12, three samples were collected at the location of SSC-2-B: SSC-20 with a TCB concentration of 33.2 mg/kg, SSC-20-B with a TCB concentration of 469 mg/kg and SDT-4 with a TCB concentration of 109 mg/kg. None of these samples has a TCB concentration level of 542.7 mg/kg. According to the figure legend, samples labeled "SDT" were sediment toxicity test samples while samples labeled "SSC" were sediment toxicity test screening samples. However, the lab report in Appendix J references sample SSC-20-B as the sample used for the test. Table 2-8 notes that the analytical results for sample SSC-20-B have not been validated.

Please respond to the following questions and provide more detailed information about exactly how the toxicity test was performed. The questions are:

1. Which sample was used for the Hyaella sediment toxicity test?
2. What was the TCB concentration level in the sample used for the Hyaella sediment toxicity test?
3. What explanations are possible for the varying TCB concentration levels in sediment samples apparently collected from the same location?

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4. Have the analytical results for sample SSC-20-B been validated at some point after Table 2-8 was prepared?

The second item in the ecological assessment that has raised concern about cleanup levels is some reviewers' inability to reproduce the calculations for the great blue heron. The RI text is confusing to the reviewers in that the term PD, which is in the exposure equations for fish ingestion and water ingestion (RI Tables 6-82 and 6-85, respectively) is not defined. The following two statements appear to be in conflict. "Nevertheless it was conservatively assumed that one-third of the heron diet would be obtained from Red Lion Creek in the site vicinity. It was conservatively assumed that 30% of a heron's total diet would be obtained from Red Lion Creek in the vicinity of the Standard Chlorine site." In the equation for fish ingestion dose, only the value of 0.30 for the fraction ingested within Site vicinity is defined.

The RI refers to section 6.2 as the source of the fish data to be used in the ingestion estimate, but does not identify the actual value that was used. Depending on whether the mean value for sunfish, the value for catfish, or the mean of the catfish and sunfish values is used, the fish ingestion dose is either 8.6×10^{-4} , 4.5×10^{-3} , or 2.6×10^{-3} mg/kg/day. The reviewers cannot determine which fish concentration value was used in the RI to estimate a fish ingestion dose of 1.5×10^{-3} mg/kg/day.

The reviewers cannot replicate the surface water ingestion intakes. For example, for chlorobenzene a daily intake of 3.12×10^{-6} mg/kg/day was estimated in RI Tables 6-83 and 6-84. The arithmetic mean surface water concentration of chlorobenzene from RI Table 6-5 is 0.064 mg/l and the 95% concentration is 0.120 mg/l. It is, therefore, impossible to estimate the same intake for both the average and 95% exposure case. Using these concentrations in the surface water intake equation (RI Table 6-85) the reviewers obtain an estimated intake of 1.7×10^{-3} mg/kg/day for the average case and 3.1×10^{-3} mg/kg/day for the 95% case.

By adding the estimated fish and surface water ingestion, the reviewers calculate an average exposure of great blue heron to chlorobenzene on the order of 4.3×10^{-3} mg/kg/day, as opposed to the 1.5 mg/kg/day presented in RI Table 6.83.

Please explain the discrepancies in the calculation that are discussed above. Further information about how the RI calculations were performed and the sources of the data used in the calculations will help resolve this concern.

These two issues regarding the ecological assessment of the site are important in finalizing cleanup levels for the site. Please provide a response to the concerns discussed in this letter as soon as possible, no later than October 5, 1993.

If you have any questions, please contact me at 323-4540.

Sincerely,



Anne V. Hiller
Environmental Scientist III
Superfund Branch

AVH:avh/dew
AVH93082.wp

pc: N. V. Raman
Karl Kalbacher
Kate Lose (3HW42)*

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